

Patent claims

1. A card receiving device (1), in particular a flat card receiving device for a tachograph in a motor vehicle, which  
5 card receiving device draws a card (2) completely into its interior, has an elongate receiving opening through which the card (2) passes into the card receiving device (1) in an insertion direction (9), and has a locking unit (29) which has  
10 at least one locking element (30r, 30l) which can be moved into the clear cross section of the receiving opening, characterized in that the locking element (30r, 30l) has at least one abutment area (39r, 39l) which touches the card (2) located in the card receiving device (1) at the outwardly pointing end face (31) or in the region of a corner or rounded section of  
15 the card (2) which adjoins this end face (31), and at least temporarily presses said card in the insertion direction (9).

2. The card receiving device (1) as claimed in claim 1, characterized in that the card (2) moves in the insertion  
20 direction (9) essentially in an insertion plane (4).

3. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the locking element (30r, 30l) is rotatably mounted about a first rotation  
25 axis (20r, 20l).

4. The card receiving device (1) as claimed in claim 2, characterized in that the first rotation axis (20r, 20l) runs perpendicular to the insertion plane (4) of the card (2).  
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5. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the card receiving device (1) has a slotted-link-like first guide (34r, 34l), and the locking element (30r, 30l) has a first guide  
35 element (35r, 35l) in the form of a sliding block, the locking

element (30r, 30l) can be moved into a locking position and out of the locking position by means of the first guide (35r, 35l) and the first guide element (35r, 35l), in particular can be pivoted about a first rotation axis (20r, 20l).

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6. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the slotted-link-like first guide (34r, 34l) is a constituent part of an actuating lever (36) which can be rotated about a second  
10 rotation axis (20r, 20l).

7. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the locking element (30r, 30l) has an abutment piece (37r, 37l) which is  
15 movably fitted to said locking element, at least temporarily bears against the card (2) at the outwardly pointing end face (31) or in the region of a corner (32) or rounded section of the card (2) which adjoins this end face, and at least temporarily presses the card (2) in the insertion direction  
20 (9).

8. The card receiving device (1) as claimed in claim 7, characterized in that the abutment piece (37r, 37l) is spring-mounted on the locking element (30r, 30l).

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9. The card receiving device (1) as claimed in at least one of claims 7 and 8, characterized in that the abutment piece is spring-mounted by means of a first leaf spring (38l, 38r).

30 10. The card receiving device (1) as claimed in at least one of claims 7 and 9, characterized in that the abutment piece (37r, 37l) is movably mounted on the locking element (30r, 30l) essentially tangentially or at an acute angle to the circumferential direction of the first rotation axis (20r, 20l)  
35 of the locking element (30r, 30l).

11. The card receiving device (1) as claimed in at least one of claims 7 to 10, characterized in that an abutment area (39r, 39l) on the abutment piece (37r, 37l) is oriented obliquely to the direction of movement of the abutment piece (37r, 37l) in relation to the locking element (30r, 30l), said abutment area bearing against the card (2) at an outwardly pointing corner (32) or rounded section during an inward-movement phase.

12. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that an arresting element (51) is fitted to at least one locking element (30r, 30l), can be moved to an "arrested position", and arrests the locking unit (29) in a "locked position".

13. The card receiving device (1) as claimed in claim 12, characterized in that an arresting element (51) is fitted precisely to a locking element (30r, 30l).

14. The card receiving device (1) as claimed in at least one of claims 12 and 13 and at least one of claims 7 to 9, characterized in that the arresting element (51) restricts the mobility of the abutment piece (37r, 37l) in the "arrested position".

15. The card receiving device (1) as claimed in claim 14, characterized in that the abutment piece (37r, 37l) has so much play with respect to the arresting element (51) in the "arrested position" that it can move in a sprung manner within tolerances of the card (2) to width, length and form, and the abutment piece (37r, 37l) has so little play with respect to the arresting element (51) in the "arrested position" that the clear width of the receiving opening is blocked to such an extent that the card (2) cannot be removed.

16. The card receiving device (1) as claimed in at least one of claims 14 and 15, characterized in that the arresting element (51) is movably fitted to the locking element (30r, 301).

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17. The card receiving device (1) as claimed in at least one of claims 14 to 16, characterized in that the arresting element (51) can move in a translatable fashion in relation to the locking element (30r, 301) and is mounted on the locking element (30r, 301) such that it can slide.

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18. The card receiving device (1) as claimed in at least one of claims 14 to 17, characterized in that the arresting element (51) can be controlled and moved by means of an actuating lever (36).

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19. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that said card receiving device has two locking elements (30r, 301) which are arranged in mirror-image fashion with respect to one another on a middle plane of a receiving shaft (40) which is oriented perpendicular to the insertion plane (4), and at the side of the receiving shaft (40).

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20. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the card receiving device (1) has a stop (41) for the card (2) at the end of a receiving shaft (40).

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21. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the card (2) is permanently pressed against the stop (41) in the end position by means of an elastic element.

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22. The card receiving device (1) as claimed in at least one of claims 7 to 9 and at least one of claims 20 and 21, characterized in that the card (2) is permanently pressed against the stop (41) in the end position by means of the abutment piece (37r, 37l).

23. The card receiving device (1) as claimed in at least one of claims 20 to 22, characterized in that the stop (41) is fixed to a set (57) of contacts.

24. The card receiving device (1) as claimed in claim 23, characterized in that the card receiving device (1) has a closure means (6) which extends in the longitudinal direction of the receiving opening and blocks the receiving opening in the "closed position" of the closure means (6).

25. The card receiving device (1) as claimed in at least one of claims 23 and 24, characterized in that the closure element (7) can be moved in the normal direction of the insertion plane (4) for the travel required to receive the card (2).

26. The card receiving device (1) as claimed in at least one of claims 23 to 25, characterized in that the closure element (7) is spring-mounted on the card receiving device (1) by means of at least one elastic element.

27. The card receiving device (1) as claimed in claim 26, characterized in that the elastic element is a second leaf spring (11), and the second leaf spring (11) can be blocked in the "closed position" of the closure means (6) by means of the locking element (30r, 30l) of the locking unit (29).

28. The card receiving device (1) as claimed in at least one of claims 23 to 27, characterized in that the closure element

(7) is integrally fitted to at least one second leaf spring (11).

29. The card receiving device (1) as claimed in at least one of claims 23 to 28, characterized in that the closure element (7) is spring-mounted in the normal direction of the insertion plane (4) for the travel required to receive the card (2).

30. The card receiving device (1) as claimed in at least one of the preceding claims 23 to 29, characterized in that the closure means (6) can be locked in the "closed position" by means of the locking unit (29).

31. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the locking element (30r, 30l) of the locking unit (29) can be moved, particularly rotated, in a plane essentially parallel to the card (2) moving in the card receiving device (1).

32. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the card (2) can be automatically drawn in.

33. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the card (2) can be automatically ejected.

34. The card receiving device (1) as claimed in at least one of the preceding claims, characterized in that the card receiving device (1) has a set (57) of contacts for making contact with the card (2).

35. A method for receiving a card (2) in a card receiving device (1), in particular a flat card receiving device for a tachograph in a motor vehicle, which card receiving device

draws a card (2) completely into an insertion plane (4), has an elongate receiving opening through which the card (2) passes into a receiving shaft (40) of the card receiving device (1), and has a locking unit (29) which has at least one locking element (30r, 30l) which can be moved into the clear cross section of the receiving opening, characterized in that the locking element (30r, 30l) temporarily bears the card (2) located in the card receiving device (1) at the outwardly pointing end face (31) or in the region of a corner (32) or rounded section of the card (2) which adjoins this end face (31), and at least temporarily presses the card (2) in the insertion direction (9).

36. The method as claimed in claim 35, characterized in that the locking element (30r, 30l) permanently presses the card (2) against a stop (41) during writing operations and/or reading operations.

37. The method as claimed in claim 35, characterized in that a clamping unit clamps the card (2) in a first step, the card (2) is transported into the card receiving device (1) in a second step, the clamping action of the clamping unit is released from the card (2) in a third step, and the locking unit (29) pushes the card (2) to an end position in a fourth step.

38. The method as claimed in claim 35, characterized in that, in a fourth step, the locking unit (29) pushes the card (2) to an end position in which first contacts (56) of a set (57) of contacts are connected to contact areas on the card (2).

39. The method as claimed in claim 35, characterized in that information is read from the card (2) or stored in the card (2) in a fifth step.